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| 10/549,393 | 07/10/2006 | Bronwyn Annette Roberts | 101016-00001 | 6320 |

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MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

| EXAMINER | |
|---|---|
| MARCHESCHI, MICHAEL A | |
| **ART UNIT** | **PAPER NUMBER** |
| 1793 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/549,393 | ROBERTS ET AL. | |
| | Examiner | Art Unit | |
| | Michael A. Marcheschi | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The disclosure is objected to because of the following informalities:

The specification does not contain a section entitled “Brief description of drawings” and the related description thereof as is required.

Appropriate correction is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 13 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a particle size less than 20 microns (page 5, lines 17-18), does not reasonably provide enablement for a particle size of only 20 microns. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The claim recites a size of only “20 microns". This encompasses a definite value of only 20 microns, however, the specification only teaches the use of an average size less than 20 microns. Such a disclosure does not support the claimed definite value of only “20 microns”.

Claims 12, 13 and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 is indefinite because it appear that the limitation “ands at least 4% by mass particles” is incomplete (see specification on page 5).

Claim 13 is indefinite because it depend on an indefinite claims.

Claim 18 is indefinite because the examiner is unclear as to what encompasses “a too rapid rate”, thus rendering the scope of the claim unclear.

Claim 19 is indefinite as to the limitation “other transition metal” because the examiner is unclear as to if this is the same material as the “another transition metal” that precedes it. If not, how are they different?

Claim 20 is indefinite because it defines the “other transition metal”, however, the examiner is unclear as to if this is the same material as the “another transition metal” that is defined in claim 19. If not, how are they different?

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 14-20 are rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008).

The reference teaches in column 2, lines 65-column 11, line 65, a tool component (see figures) comprising a working layer of ultra-hard abrasive (PCD) bonded to a substrate along an interface, the working layer presenting a working surface and a periphery around the working surface which provides a cutting edge for the insert, the working layer of ultra-hard abrasive having a first region extending into the working layer from the working surface and a second region in contact with the first region, the wear resistance of the first region being less than that of the second region.

With respect to claims 1-3, the reference does not specifically define that the wear resistance of the first region is between 50% and 95% of that of the second region, however, the reference does state that the wear resistance of the first region being less than that of the second region, thus this would broadly include any and all percentage values as long as the defined criteria is met. In view of this, this broadly meets the claimed broad percentage values. In addition, the purpose of this difference in wear resistance is specified by the reference in column 6, line 32-column 7, line 14, thus though routine experimentation and optimization, one skilled in the art would be able to determine the required percentages need to produce the most optimal tool in terms of the difference in wear resistance. In other words, the problem to be solved may

therefore be regarded as how to obtain the optimum wear resistance between the two regions. The solution proposed by the reference is considered as reading on the claimed invention through routine experimentation and optimization since it merely consists in the selection of a broad percentage range which is well within the scope of the skilled artisan. In general, a selection can only be regarded as inventive, if the range specified presents unexpected effects or properties in relation to the rest of the range and it is unlikely that such a broad range defined in the instant claims implies such effects.

With respect to claim 4, the reference teaches that the table comprises successive layers.

With respect to claim 14, since the resulting wear resistance of the layers and layers themselves are the same, it is the examiners position that this aspect is expected and therefore obvious absent evidence to the contrary.

With respect to claim 15, the reference clearly teaches this in column 11, lines 62-63 and claim 19.

With respect to claim 16, the reference clearly teaches this in claim 14

With respect to claims 17 and 18, the reference uses another material and/or catalyst/solvent and it is the examiners position that this reads on the claimed limitation because said components can act as compromising material in the absence of any evidence showing the contrary.

With respect to claims 19 and 20, claim 14 of the reference broadly teaches aspects which can read on the claimed subject matter absent evidence to the contrary

(i.e. at least one metal in at least one region means that any of the recited metals can be any of the recited regions).

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008) alone, as applied to claim 1 above or further in view of Dossena et al. (358).

With respect to claim 8, the primary reference broadly teaches in claim 18 that a difference in the catalyst/solvent component is apparent between the two regions. Although this is not defined as being that the first region contains more catalyst solvent when compared to the second region, the difference of 20% as defined by this reference broadly reads on this limitation, absent clear evidence to the contrary.
In the alternative, it is known that increasing the diamond content in a bond (i.e. metal bond-see section [0071] of Dossena et al.) increases the wear resistance, as is clearly shown by the secondary reference in section [0048], thus since the first region of the primary reference is less wear resistance, the skilled artisan would have appreciated the claimed limitation in view of the teaching of the secondary reference in that a decrease in the diamond content will decease the wear resistance of the layer, and such a decrease in the diamond content means that the cobalt content is higher.

With respect to claim 10, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to adjust the cobalt content and/or add another component (see column 11, lines 51-65 and claims 16 and 18-19). With this being apparent, it is the examiner position if these two procedures are used; one skilled

in the art would realize and thus find obvious that the particle size of the diamonds do not have to differ materially and therefore can be uniform in the two regions.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008) as applied to claim 4 above, and further in view of Hall (918).

With respect to claims 5-7, the primary reference is silent as to the depth (thickness) of the first region. However, this is an obvious design possibility because in tool components based on a working layer of ultra-hard abrasive (PCD) bonded to a substrate along an interface, wherein the working layer is based on two regions, at least, it is known that the outermost region of the working layer is usually defined with a thickness of 125 microns (column 17, lines 8-10 of the secondary reference). The skilled artisan would have been motivated to provide the outer layer with any conventional thickness known in the art and/or the desired thickness would have been an obvious design choice depending on the application of tool component sought.

Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008) as applied to claim 1 above, and further in view of EP 411831.

With respect to claim 9, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to keep the particle size of the first region uniform (unimodal) and vary the size distribution in the second region (see column 5, lines 25-35 of the secondary reference).

With respect to claim 11, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to use coarser particles in the first region and finer particles in the second region (finer particles increase wear resistance) (see column 5, lines 15-19 of the secondary reference).

Claim 12 is rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008) and further in view of EP 411831, as applied to claim 11 above, and further in view of Tank et al. (268).

With respect to claim 12, the combined reference above teach the limitation of claim 11 and although the specific size distribution is not defined for the first region, it is the examiners position that the skilled artisan would have appreciated and thus found obvious that any conventional size distribution can be used for the first region and the claimed distribution is conventional in the art as is clearly shown by Tank in the abstract.

Claim 13 is rejected under 35 U.S.C. 103(a) as obvious over Portwood et al. (008) and further in view of EP 411831, as applied to claim 11 above, and further in view of Tank et al. (748).

With respect to claim 13, the combined reference above teach the limitation of claim 11 and although the specific size distribution is not defined for the second region, it is the examiners position that the skilled artisan would have appreciated and thus found obvious that any conventional size distribution can be used for the second region

and the claimed distribution is conventional in the art as is clearly shown by Tank in the abstract.

Claims 1-4, 9, 11, 14-15 and 17-18 are rejected under 35 U.S.C. 103(a) as obvious over EP 411,831.

The reference teaches in the entire document, a tool component (see figures) comprising a working layer of ultra-hard abrasive (PCD) bonded to a substrate along an interface, the working layer presenting a working surface and a periphery around the working surface which provides a cutting edge for the insert, the working layer of ultra-hard abrasive having a first region extending into the working layer from the working surface and a second region in contact with the first region, the wear resistance of the first region being less than that of the second region.

With respect to claims 1-3, the reference does not specifically define that the wear resistance of the first region is between 50% and 95% of that of the second region, however, the reference does state that the wear resistance of the first region being less than that of the second region, thus this would broadly include any and all percentage values as long as the defined criteria is met. In view of this, this broadly meets the claimed broad percentage values. In addition, the purpose of this difference in wear resistance is specified by the reference in column 2, lines 21+, thus though routine experimentation and optimization, one skilled in the art would be able to determine the required percentages need to produce the most optimal tool in terms of the difference in wear resistance. In other words, the problem to be solved may therefore be regarded

as how to obtain the optimum wear resistance between the two regions. The solution proposed by the reference is considered as reading on the claimed invention through routine experimentation and optimization since it merely consists in the selection of a broad percentage range which is well within the scope of the skilled artisan. In general, a selection can only be regarded as inventive, if the range specified presents unexpected effects or properties in relation to the rest of the range and it is unlikely that such a broad range defined in the instant claims implies such effects.

With respect to claim 4, the reference teaches that the table comprises successive layers.

With respect to claim 9, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to keep the particle size of the first region uniform (unimodal) and vary the size distribution in the second region (see column 5, lines 25-35).

With respect to claim 11, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to use coarser particles in the first region and finer particles in the second region (finer particles increase wear resistance) (see column 5, lines 15-19).

With respect to claim 14, since the resulting wear resistance of the layers and layers themselves are the same, it is the examiners position that this aspect is expected and therefore obvious absent evidence to the contrary.

With respect to claim 15, the reference clearly teaches this in column 5, lines 41+.

With respect to claims 17 and 18, the reference uses another material and it is the examiners position that this reads on the claimed limitation because said component can act as compromising material in the absence of any evidence showing the contrary.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as obvious over EP 411831 (008) as applied to claim 4 above, and further in view of Hall (918).

With respect to claims 5-7, the primary reference is silent as to the depth (thickness) of the first region. However, this is an obvious design possibility because in tool components based on a working layer of ultra-hard abrasive (PCD) bonded to a substrate along an interface, wherein the working layer is based on two regions, at least, it is known that the outermost region of the working layer is usually defined with a thickness of 125 microns (column 17, lines 8-10 of the secondary reference). The skilled artisan would have been motivated to provide the outer layer with any conventional thickness known in the art and/or the desired thickness would have been an obvious design choice depending on the application of tool components sought.

Claims 8, 10, 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as obvious over EP 411831, as applied to claims 1 and 14 above in view of Portwood et al. (008) alone or further in view of Dossena et al. (358).

With respect to claims 8 and 16, the primary reference teaches a PCD layer having two regions and although this reference does not specify that the regions contain a catalyst/solvent material, it is the examiners position that the skilled artisan would have found this aspect obvious because it is generally known that catalyst/solvents are used in conjunction with diamond to make PCD layers, as is clearly shown by Portwood in claim 14. In view of this, it is known to vary the catalyst/solvent content is each region in order to create the difference in wear resistance, as is also shown by Portwood (claim 18 of Portwood teaches that a difference in the catalyst/solvent component is apparent between the two regions). Although this is not defined as being that the first region contains more catalyst solvent when compared to the second region, the difference of 20% as defined by this reference broadly reads on this limitation, absent clear evidence to the contrary. In view of this, any known mechanism to produce a difference is wear resistance of the regions defined by the primary reference would have been well within the knowledge of the skilled artisan. In addition, with the combination above being obvious, it is known that increasing the diamond content in a bond (i.e. metal bond-see section [0071] of Dossena et al.) increases the wear resistance, as is clearly shown by Dossena et al. in section [0048], thus since the first region of the primary reference is less wear resistance, the skilled artisan would have appreciated the claimed limitation in view of the teaching of the secondary reference in that a decrease in the diamond content will decease the wear resistance of the layer, and such a decrease in the diamond content means that the cobalt content is higher.

With respect to claim 10, the primary reference states various ways to adjust the wear resistance of each layer and this motivates the skilled artisan to utilize any known method for this adjustment and one such way is to add another component (see column 5, lines 41+). With this being apparent, it is the examiner position if this procedure is used; one skilled in the art would realize and thus find obvious that the particle size of the diamond do not have to differ materially can be uniform in the two regions.

With respect to claim 19-20, it has been shown that the use of a catalyst/solvent (i.e. metal) is obvious and thus the use of various catalyst/solvents in the respective layers is well within the scope of the skilled artisan and, thus since claim 14 of Portwood reference broadly teaches aspects which can read on the claimed subject matter absent evidence to the contrary (i.e. at least one metal in at least one region means that any of the recited metals can be any of the recited regions), no patentable distinction is seen to exist.

Claim 12 is rejected under 35 U.S.C. 103(a) as obvious over EP 411831, as applied to claim 11 above in view of Tank et al. (268).

With respect to claim 12, the primary reference teaches the limitation of claim 11 and although the specific size distribution is not defined for the first region, it is the examiners position that the skilled artisan would have appreciated and thus found obvious that any conventional size distribution can be used for the first region and the claimed distribution is conventional in the art as is clearly shown by Tank in the abstract.

Claim 13 is rejected under 35 U.S.C. 103(a) as obvious over EP 411831, as applied to claim 11 above, and further in view of Tank et al. (748).

With respect to claim 13, the primary reference teaches the limitation of claim 11 and although the specific size distribution is not defined for the second region, it is the examiners position that the skilled artisan would have appreciated and thus found obvious that any conventional size distribution can be used for the second region and the claimed distribution is conventional in the art as is clearly shown by Tank in the abstract.

The additional references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael A Marcheschi/
Primary Examiner, Art Unit 1793